CPSC 304 Project Cover Page

Milestone #: 4

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Group Number: 5

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By typing our names and student numbers in the above table, we certify that the work in the attached assignment was performed solely by those whose names and student IDs are included above. (In the case of Project Milestone 0, the main purpose of this page is for you to let us know your e-mail address, and then let us assign you to a TA for your project supervisor.)

In addition, we indicate that we are fully aware of the rules and consequences of plagiarism, as set forth by the Department of Computer Science and the University of British Columbia

Project Description and Achievements

This project was pitched as a type of video game asset management system with the goal of using a relational database to model several aspects of the Pokémon franchise (with slight variations to better suit CPSC 304 project requirements). Our goal as a development team was to integrate a clean and simple UI with some simple "game-like" mechanics to help us learn about full stack development and how backends interact with frontends throughout the development process.

Over the course of this project, we believe that we were successful in achieving such an application. We were able to complete a simple UI design that allows users to navigate through several web pages easily and even integrate a functional (however, not fully secure) login system to model what the app experience would be like for a 'real' user.

Throughout the different pages in our application we were able to fulfill the project requirements on the database side while also providing some limited game functionality. Users are able to create/login into accounts, collect 'random' pokemon, challenge gyms with the possibility of winning or losing, train pokemon to level up, buy items in the shop, and see leaderboards throughout the site. Users can also use the pokedex page to filter and browse the compendium of pokemon available in our application. The gameplay mechanics are simple, but they provide important context for the database and create an entertaining environment for the user to interact with our database.

Final Schema and Database Initialization

The final schema for our project is largely the same as the schema turned in for Milestone 2. No additional changes were needed (note that there was a slight modification to the DDL for the Move table as per required from TA feedback in Milestone 2, although this is not visible in the schema; ON CASCADE DELETE was added to the foreign relationship to Type). Please see appendix A for the data present in our database after running Pokemon.sql.

Move (<u>name:</u> varchar(50), pp: int, effect: varchar(160), damage: int, accuracy: int, **type**: varchar(20)) *(effect - UNIQUE, CK; type - NOT NULL; accuracy - NOT NULL)*

NAME	PP	EFFECT	DAMAGE	ACCURACY	TYPE
absorb	25	A nutrient-draining attack. The user's HP is restored by half the damage taken by the target.	20	100	grass
accelerock	20	The user smashes into the target at high speed. This move always goes first.	40	100	rock
acid	30	The foe is sprayed with a harsh, hide-melting acid that may lower DEFENSE.	40	100	poison
acrobatics	15	The user nimbly strikes the target. If the user is not holding an item, this attack inflicts massive damage.	55	100	flying
aeroblast	5	A vortex of air is shot at the target to inflict damage. Critical hits land more easily.	100	95	flying
air slash	15	The user attacks with a blade of air that slices even the sky. It may also make the target flinch.	75	95	flying
alluring voice	10	The user attacks the target using its angelic voice. This also confuses opposing Pokemon.	120	100	ghost
attack order	15	The user calls out its underlings to pummel the target. Critical hits land more easily.	90	100	bug
avalanche	10	The power of this attack move is doubled if the user has been hurt by the target in the same turn.	60	100	ice
barb barrage	10	The user launches countless toxic barbs to inflict damage. This may also poison the target. This move's power is doubled if the target is already poisoned.	60	100	poison
barrage	20	Round objects are hurled at the target to strike two to five times in a row.	15	85	normal

NAME	PP	EFFECT	DAMAGE	ACCURACY	TYPE
bind	20	Things such as long bodies or tentacles are used to bind and squeeze the target for four to five turns.	85	20	normal
bitter malice	10	The user attacks the target with spine-chilling resentment. This also lowers the target's Attack stat.	75	100	ghost
blaze kick	10	The user launches a kick that lands a critical hit more easily. It may also leave the target with a burn.	85	90	fire
blizzard	5	A howling blizzard is summoned to strike opposing Pok?mon. This may also leave the opposing Pok?mon frozen.	110	70	ice
body slam	15	The user drops onto the target with its full body weight. This may also leave the target with paralysis.	85	100	normal
bolt strike	5	The user surrounds itself with a great amount of electricity and charges its target. This may also leave the target with paralysis.	130	85	electric
brutal swing	20	The user swings its body around violently to inflict damage on everything in its vicinity.	60	100	dark
bubble	30	A spray of countless bubbles is jetted at the opposing Pok?mon. This may also lower their Speed stat.	40	100	water
bug bite	20	The user bites the target. If the target is holding a Berry, the user eats it and gains its effect.	60	100	bug
charge beam	10	The user attacks with an electric charge. The user may use any remaining electricity to raise its Sp. Atk stat.	50	90	electric
chilling water	20	The user attacks the target by showering it with water that's so cold it saps the target's power. This also lowers the target's Attack stat.	50	100	water

NAME	PP	EFFECT	DAMAGE	ACCURACY	TYPE
clanging scales	5	The user rubs the scales on its entire body and makes a huge noise to attack opposing Pok?mon. The user's Defense stat goes down after the attack.	110	100	dragon
close combat	5	The user fights the target up close without guarding itself. It also cuts the user's Defense and Sp. Def.	120	100	fighting
comet punch	15	The target is hit with a flurry of punches that strike two to five times in a row.	18	85	normal
confusion	25	The target is hit by a weak telekinetic force. This may also confuse the target.	50	100	psychic
dark pulse	15	The user releases a horrible aura imbued with dark thoughts. This may also make the target flinch.	80	100	dark
dazzling gleam	10	The user damages opposing Pok?mon by emitting a powerful flash.	80	100	fairy
discharge	15	The user strikes everything around it by letting loose a flare of electricity. This may also cause paralysis.	80	100	electric
doom desire	5	Two turns after this move is used, a concentrated bundle of light blasts the target.	140	100	steel
dragon meteor	5	Comets are summoned down from the sky onto the target. The attack's recoil harshly lowers the user's Sp. Atk stat.	130	90	dragon
dragon claw	15	The user slashes the target with huge, sharp claws.	80	100	dragon
dragon rush	10	The user tackles the target while exhibiting overwhelming menace. This may also make the target flinch.	100	75	dragon

NAME	PP	EFFECT	DAMAGE	ACCURACY	TYPE
dream eater	15	The user eats the dreams of a sleeping target. It absorbs half the damage caused to heal its own HP.	100	100	psychic
earth power	10	The user makes the ground under the target erupt with power. This may also lower the target's Sp. Def.	90	100	ground
eerie spell	5	The user attacks with its tremendous psychic power. This also removes 3 PP from the target's last move.	80	100	psychic
ember	25	The target is attacked with small flames. This may also leave the target with a burn.	40	100	fire
energy ball	10	The user draws power from nature and fires it at the target. This may also lower the target's Sp. Def stat.	90	100	grass
eruption	5	The user attacks opposing Pok??mon with explosive fury. The lower the user's HP, the lower the move's power.	150	100	fire
expanding force	10	The user attacks the target with its psychic power. When the ground is Psychic Terrain, this move's power is boosted and it damages all opposing Pok??mon.	80	100	psychic
explosion	5	The user attacks everything around it by causing a tremendous explosion. The user faints upon using this move.	250	100	normal
fairy wind	30	The user stirs up a fairy wind and strikes the target with it.	40	100	fairy
fire blast	5	The target is attacked with an intense blast of all-consuming fire. This may also leave the target with a burn.	110	85	fire
flame wheel	25	The user cloaks itself in fire and charges at the target. It may also leave the target with a burn.	60	100	fire

NAME	PP	EFFECT	DAMAGE	ACCURACY	TYPE
fly	15	The user soars and then strikes its target on the next turn. This can also be used to fly to any familiar town.	90	95	flying
freeze shock	5	On the second turn, the user hits the target with electrically charged ice. This may also leave the target with paralysis.	140	90	ice
frenzy plant	5	The user slams the target with an enormous tree. The user can't move on the next turn.	150	90	grass
grass pledge	10	A column of grass hits the target. When used with its water equivalent, its power increases and a vast swamp appears.	80	100	grass
gust	35	A gust of wind is whipped up by wings and launched at the target to inflict damage.	40	100	flying
head smash	5	The user attacks the target with a hazardous, full-power headbutt. This also damages the user terribly.	150	80	rock
heart stamp	25	The user unleashes a vicious blow after its cute act makes the target less wary. This may also make the target flinch.	60	100	psychic
hex	10	This relentless attack does massive damage to a target affected by status conditions.	65	100	ghost
hydro cannon	5	The target is hit with a watery blast. The user can't move on the next turn.	150	90	water
ice fang	15	The user bites with cold-infused fangs. This may also make the target flinch or leave it frozen.	65	95	ice
icy wind	15	The user attacks with a gust of chilled air. This also lowers the opposing Pok??mon's Speed stats.	55	95	ice

NAME	PP	EFFECT	DAMAGE	ACCURACY	TYPE
infestation	20	The target is infested and attacked for four to five turns. The target can't flee during this time.	20	100	bug
iron tail	15	The target is slammed with a steel-hard tail. This may also lower the target's Defense stat.	100	75	steel
leaf blade	15	The user handles a sharp leaf like a sword and attacks by cutting its target. Critical hits land more easily.	90	100	grass
light of ruin	5	Drawing power from the Eternal Flower, the user fires a powerful beam of light. This also damages the user quite a lot.	140	90	fairy
low sweep	20	The user makes a swift attack on the target's legs, which lowers the target's Speed stat.	65	100	fighting
lunge	15	The user makes a lunge at the target, attacking with full force. This also lowers the target's Attack stat.	80	100	bug
malignant chain	5	The user pours toxins into the target by wrapping them in a toxic, corrosive chain. This may also leave the target badly poisoned.	100	100	poison
mega kick	5	The target is attacked by a kick launched with muscle-packed power.	120	75	normal
mega punch	20	The target is slugged by a punch thrown with muscle-packed power.	80	85	normal
metal claw	35	The target is raked with steel claws. This may also raise the user's Attack stat.	50	95	steel
meteor beam	10	The user gathers energy from space and boosts its Sp. Atk stat on the first turn, then attacks on the next turn.	120	90	rock

NAME	PP	EFFECT	DAMAGE	ACCURACY	TYPE
misty explosion	5	The user attacks everything around it and faints upon using this move. This move's power is boosted on Misty Terrain.	100	100	fairy
mud bomb	10	The user launches a hard-packed mud ball to attack. This may also lower the target's accuracy.	65	85	ground
night daze	10	The user lets loose a pitch-black shock wave at its target. This may also lower the target's accuracy.	85	95	dark
nuzzle	20	The user attacks by nuzzling its electrified cheeks against the target. This also leaves the target with paralysis.	100	20	electric
octazooka	10	The user attacks by spraying ink in the target's face or eyes. It may also lower the target's accuracy.	65	85	water
outrage	10	The user rampages and attacks for two to three turns. The user then becomes confused.	120	100	dragon
overheat	5	The user attacks the target at full power. The attack's recoil harshly lowers the user's Sp. Atk stat.	130	90	fire
peck	35	The target is jabbed with a sharply pointed beak or horn.	100	35	flying
petal blizzard	15	The user stirs up a violent petal blizzard and attacks everything around it.	90	100	grass
poison fang	15	The user bites the target with toxic fangs. This may also leave the target badly poisoned.	50	100	poison
poison sting	35	The user stabs the target with a poisonous stinger. This may also poison the target.	15	100	poison

NAME	PP	EFFECT	DAMAGE	ACCURACY	TYPE
power gem	20	The user attacks with a ray of light that sparkles as if it were made of gemstones.	80	100	rock
powder snow	25	The user attacks with a chilling gust of powdery snow. It may also freeze the targets.	40	100	ice
psychic fangs	10	The user bites the target with its psychic capabilities. This can also destroy Light Screen and Reflect.	85	100	psychic
psyshock	10	The user materializes an odd psychic wave to attack the target. This attack does physical damage.	80	100	psychic
razor leaf	25	Sharp-edged leaves are launched to slash at the opposing team. Critical hits land more easily.	55	95	grass
razor shell	10	The user cuts its target with sharp shells. This may also lower the target's Defense stat.	75	95	water
rock slide	10	Large boulders are hurled at the opposing team to inflict damage. It may also make the targets flinch.	75	90	rock
sand tomb	15	The user traps the target inside a harshly raging sandstorm for four to five turns.	35	85	ground
shadow claw	15	The user slashes with a sharp claw made from shadows. Critical hits land more easily.	70	100	ghost
signal beam	15	The user attacks with a sinister beam of light. This may also confuse the target.	75	100	bug
sizzle slide	15	The user cloaks itself in fire and charges at the target. This also leaves the target with a burn.	90	100	fire

NAME	PP	EFFECT	DAMAGE	ACCURACY	TYPE
sky attack	5	A second-turn attack move where critical hits land more easily. It may also make the target flinch.	140	90	flying
sludge	20	Unsanitary sludge is hurled at the target. This may also poison the target.	65	100	poison
spark	20	The user throws an electrically charged tackle at the target. This may also leave the target with paralysis.	65	100	electric
sparkly swirl	15	The user attacks the target by wrapping it with a whirlwind of an overpowering scent. This also heals all status conditions of the user's party.	90	100	fairy
stone edge	5	The user stabs the target with sharpened stones from below. Critical hits land more easily.	100	80	rock
surf	15	It swamps the area around the user with a giant wave. It can also be used for crossing water.	90	100	water
thrash	10	The user rampages and attacks for two to three turns. It then becomes confused, however.	120	100	normal
thunder punch	15	The target is punched with an electrified fist. This may also leave the target with paralysis.	75	100	electric
volt switch	20	After making its attack, the user rushes back to switch places with a party Pok??mon in waiting.	70	100	electric
water gun	25	The target is blasted with a forceful shot of water.	40	100	water
water pulse	20	The user attacks the target with a pulsing blast of water. This may also confuse the target.	60	100	water

NAME	PP	EFFECT	DAMAGE	ACCURACY	TYPE
waterfall	15	The user charges at the target and may make it flinch. It can also be used to climb a waterfall.	80	100	water
wood hammer	15	The user slams its rugged body into the target to attack. This also damages the user quite a lot.	120	100	grass
zippy zap	15	The user attacks the target with bursts of electricity at high speed. This move always goes first and results in a critical hit.	50	100	electric

Type (name: varchar(20))

```
NAME
--------------------
bug
dark
dragon
electric
fairy
fighting
fire
flying
ghost
grass
ground

NAME
--------------------
ice
normal
poison
psychic
rock
steel
water
```

Items (name: varchar(30), effect: varchar(120)) *(effect - UNIQUE, CK)*

```
NAME                          EFFECT
--------------------------    -------------------------------------------------------
leppa berry                   When one move reaches 0 PP, restores 10 PP of the move
persim berry                  When confused, cures confusion
razz berry                    Makes wild Pokemon easier to catch
oran berry                    When holder has less than 1/2 of their max HP, restores 10 HP
lum berry                     When holder has a status effect or confusion, cures the status effect
sitrus berry                  When holder has less than 1/2 of their max HP, restores 1/4 of max HP
antidote
potion                        Restores 20 HP
super potion                  Restores 60 HP
elixir                        Restores 10 PP of all moves of a Pokemon
lemonade                      Restores 70 HP
```

Berries (**name**: varchar(30), flavour: varchar(20)) *(flavour - NOT NULL)*

```
NAME                          FLAVOUR
----------------------------  --------------------
leppa berry                   spicy
persim berry                  sweet
razz berry                    dry
oran berry                    dry
lum berry                     bitter
sitrus berry                  sour
```

Medicine (**name**: varchar(30), hp_restored: int, pp_restored: int, cures: varchar(20), cost: int) *(hp_restored - DEFAULT 0; pp_restored - DEFAULT 0)*

```
NAME                     HP_RESTORED PP_RESTORED CURES                     COST
----------------------   ----------- ----------- --------------------  ---------
antidote                          0           0 poison                      100
potion                           20           0                             300
super potion                     60           0                             700
elixir                            0          10                            1500
lemonade                         70           0                             350
```

Gym (<u>name</u>: varchar(50), leader: varchar(20), **type**: varchar(20), **city**: varchar(30)) *(leader - UNIQUE (CK); type - NOT NULL; city - NOT NULL)*

```
NAME                        LEADER        TYPE        CITY
--------------------------  ------------  ----------  --------------------
Pewter Gym                  Brock         rock        Pewter City
Cerulean Gym                Misty         water       Cerulean City
Hidden Cerulean Gym         Jessie        water       Cerulean City
Violet Gym                  Falkner       flying      Violet City
Lavaridge Gym               Flannery      fire        Lavaridge Town
Canalave Gym                Byron         steel       Canalave City
Santalune Gym               Viola         bug         Santalune  City
Hammerlocke Stadium         Raihan        dragon      Hammerlocke
```

City_Region(city: varchar(30), region: varchar(20)) *(region - NOT NULL)*

```
CITY                            REGION
-----------------------------   -----------
Pewter City                     Kanto
Cerulean City                   Kanto
Violet City                     Johto
Lavaridge Town                  Hoenn
Canalave City                   Sinnoh
Santalune  City                 Kalos
Hammerlocke                     Galar
```

Badge (name: varchar(20), **gym_name**: char(6))

```
NAME                  GYM_NAME
------------------    ------------------------
Basic Badge           Canalave Gym
Basic Badge           Cerulean Gym
Basic Badge           Hammerlocke Stadium
Basic Badge           Lavaridge Gym
Basic Badge           Pewter Gym
Basic Badge           Santalune Gym
Basic Badge           Violet Gym
Boulder Badge         Pewter Gym
Bug Badge             Santalune Gym
Dragon Badge          Hammerlocke Stadium
Gold Badge            Canalave Gym

NAME                  GYM_NAME
------------------    ------------------------
Gold Badge            Cerulean Gym
Gold Badge            Hammerlocke Stadium
Gold Badge            Lavaridge Gym
Gold Badge            Pewter Gym
Gold Badge            Santalune Gym
Gold Badge            Violet Gym
Heat Badge            Lavaridge Gym
Mine Badge            Canalave Gym
Rocket Badge          Hidden Cerulean Gym
Water Badge           Cerulean Gym
Zephyr Badge          Violet Gym
```

Battle (id: int, battle_date: Date, winner: varchar(50))

```
    ID BATTLE_DA WINNER
---------- --------- ------
     1 10-JUL-24 leader
     2 10-JUL-24 player
     3 14-JUL-24 player
     4 15-JUL-24 leader
     5 16-JUL-24 player
     6 16-JUL-24 player
     7 17-JUL-24 player
```

Pokemon (<u>name</u>: varchar(30), hp: int, attack: int, defense: int, speed: int, generation: int) *(hp - NOT NULL; attack - NOT NULL; defense - NOT NULL; speed - NOT NULL)*

NAME	HP	ATTACK	DEFENCE	SPEED	GENERATION
bulbasaur	45	49	49	45	1
ivysaur	60	62	63	60	1
venusaur	80	82	83	80	1
charmander	39	52	43	65	1
charmeleon	58	64	58	80	1
charizard	78	84	78	100	1
squirtle	44	48	65	43	1
wartortle	59	63	80	58	1
blastoise	79	83	100	78	1
caterpie	45	30	35	45	1
metapod	50	20	55	30	1

NAME	HP	ATTACK	DEFENCE	SPEED	GENERATION
butterfree	60	45	50	70	1
weedle	40	35	30	50	1
kakuna	45	25	50	35	1
beedrill	65	80	40	75	1
pidgey	40	45	40	56	1
pidgeotto	63	60	55	71	1
pidgeot	83	80	75	91	1

Player_Pokemon (**name**: varchar(30), nickname: varchar(50), **tr_username**: varchar(50), pp_level: int) *(pp_level - NOT NULL)*

NAME	NICKNAME	TR_USERNAME	PP_LEVEL
charmander	Char	pikachu	1
bulbasaur	Bob	Bob	1
charmander	Char	TheVeryBest	3
squirtle	Squirrel	Suicune7	14
ivysaur	Thorn	Suicune7	1
charmander	Helios	Suicune7	11
bulbasaur	Pog Champ	Suicune7	20
venusaur	Leafy	Suicune7	23
charmeleon	Melon	Suicune7	26
charizard	Dragon Overlord	Suicune7	99
wartortle	Tuttie	Suicune7	16

NAME	NICKNAME	TR_USERNAME	PP_LEVEL
blastoise	blastoise	Suicune7	30
caterpie	Leggy	Suicune7	3
metapod	zukerburg	Suicune7	13
butterfree	Free Bird	Suicune7	10
weedle	Sting	Suicune7	9
kakuna	Kat	Suicune7	6
beedrill	Queeny	Suicune7	18
pidgey	Wings	Suicune7	9
pidgeotto	Wings2	Suicune7	19
pidgeot	Wings3	Suicune7	27
squirtle	Mario	DatabasePro	4

NAME	NICKNAME	TR_USERNAME	PP_LEVEL
ivysaur	Flora	DatabasePro	10
charmander	Sparky	DatabasePro	15
bulbasaur	Belly	DatabasePro	2
venusaur	Dino	DatabasePro	3
charmeleon	Melly	DatabasePro	16
charizard	Hot Wings	DatabasePro	85
wartortle	Hank	DatabasePro	56
blastoise	Fraser River	DatabasePro	33
caterpie	Pumpkin	DatabasePro	31
metapod	Facebook	DatabasePro	83
butterfree	King	DatabasePro	1

NAME	NICKNAME	TR_USERNAME	PP_LEVEL
weedle	weedle	DatabasePro	19
kakuna	Dr. Bacon	DatabasePro	26
beedrill	Epipen	DatabasePro	8
pidgey	Floor Worker	DatabasePro	9
pidgeotto	Lower Management	DatabasePro	19
pidgeot	CEO	DatabasePro	26

Trainer (<u>username</u>: varchar(50), name: varchar(50), password: varchar(20), start_date: Date, **zip_postal_code**: varchar(10)) *(name - NOT NULL; password - NOT NULL)*

```
USERNAME                                       NAME                                 PASSWORD            START_DAT ZIP_POSTAL
-------------------------------------------    ---------------------------------    ----------------    --------- ----------
pokemonLvr                                     William                              TA_Time             30-JUN-24 V5Y 1C8
DatabasePro                                    Seva                                 d@t@b@seGuy101      20-JUL-24 V5T 6N9
TheVeryBest                                    Joe                                  awesomePass99*      07-JUL-24 T8N 1V9
pikachu                                        Sarah                                aSHw8nakd78bs*      09-JUL-24 T8N 0M8
redOctapus                                     Octo                                 kslfA843gg3eq2!     09-JUL-24 C1A 9B6
Bob                                            Bob                                  123456Abc           10-JUL-24 C1C 7T6
Suicune7                                       Jamie                                cpsc304IsCool       10-JUL-24 X1A 5P3
admin                                          admin                                1234                31-JUL-24 V5Y 1C8
```

Timezone(<u>zip_postal_code</u>: varchar(10), timezone: varchar(5))

```
ZIP_POSTAL TIMEZ
---------- -----
V5Y 1C8    PST
V5T 6N9    PST
T8N 1V9    MST
T8N 0M8    MST
C1A 9B6    ADT
C1C 7T6    ADT
X1A 5P3    PST
```

Trainer_Items (<u>**name**</u>: varchar(50), <u>**username**</u>: varchar(50), quantity: int) *(quantity - DEFAULT 0)*

```
NAME                        USERNAME                        QUANTITY
--------------------------  ------------------------------  ---------
potion                      TheVeryBest                             5
super potion                TheVeryBest                             1
lum berry                   TheVeryBest                             3
lum berry                   redOctapus                              8
lemonade                    redOctapus                              1
oran berry                  redOctapus                              3
persim berry                redOctapus                              4
razz berry                  pokemonLvr                             10
antidote                    pokemonLvr                              2
elixir                      pokemonLvr                              5
elixir                      DatabasePro                             6

NAME                        USERNAME                        QUANTITY
--------------------------  ------------------------------  ---------
sitrus berry                DatabasePro                             7
potion                      DatabasePro                            18
```

Trainer_Badges (**gym**: varchar(50), **username**: varchar(50), **badge**: varchar(20))

```
GYM                             USERNAME                        BADGE
------------------------------  ------------------------------  --------------------
Cerulean Gym                    TheVeryBest                     Basic Badge
Cerulean Gym                    pikachu                         Basic Badge
Hidden Cerulean Gym             Suicune7                        Rocket Badge
Pewter Gym                      pikachu                         Boulder Badge
Violet Gym                      Suicune7                        Gold Badge
```

Gym_Challenges (**gym**: varchar(50), **username**: varchar(50), **battle_id**: int)

```
GYM                             USERNAME                        BATTLE_ID
------------------------------  ------------------------------  ----------
Cerulean Gym                    TheVeryBest                             7
Cerulean Gym                    pikachu                                 2
Cerulean Gym                    pikachu                                 4
Cerulean Gym                    pokemonLvr                              1
Hidden Cerulean Gym             Suicune7                                3
Pewter Gym                      pikachu                                 6
Violet Gym                      Suicune7                                5
```

Type_Versus (**attack_type**: varchar(20), **defense_type**: varchar(20), effect_multiplier: int) *(effect_multiplier - DEFAULT 1)*

```
ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------  -------------------  -----------------
normal               normal                      1
normal               fire                        1
normal               water                       1
normal               electric                    1
normal               grass                       1
normal               ice                         1
normal               fighting                    1
normal               poison                      1
normal               ground                      1
normal               flying                      1
normal               psychic                     1

ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------  -------------------  -----------------
normal               bug                         1
normal               rock                        .5
normal               ghost                       0
normal               dragon                      1
normal               dark                        1
normal               steel                       .5
normal               fairy                       1
fire                 normal                      1
fire                 fire                        .5
fire                 water                       .5
fire                 electric                    1
```

```
ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
fire                 grass                                2
fire                 ice                                  2
fire                 fighting                             1
fire                 poison                               1
fire                 ground                               1
fire                 flying                               1
fire                 psychic                              1
fire                 bug                                  2
fire                 rock                                .5
fire                 ghost                                1
fire                 dragon                              .5

ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
fire                 dark                                 1
fire                 steel                                2
fire                 fairy                                1
water                normal                               1
water                fire                                 2
water                water                               .5
water                electric                             1
water                grass                               .5
water                ice                                  1
water                fighting                             1
water                poison                               1
```

```
ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
water                ground                               2
water                flying                               1
water                psychic                              1
water                bug                                  1
water                rock                                 2
water                ghost                                1
water                dragon                              .5
water                dark                                 1
water                steel                                1
water                fairy                                1
electric             normal                               1

ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
electric             fire                                 1
electric             water                                2
electric             electric                            .5
electric             grass                               .5
electric             ice                                  1
electric             fighting                             1
electric             poison                               1
electric             ground                               0
electric             flying                               2
electric             psychic                              1
electric             bug                                  1
```

```
ATTACK_TYPE          DEFENSE_TYPE        EFFECT_MULTIPLIER
-------------------- ------------------- -----------------
electric             rock                                1
electric             ghost                               1
electric             dragon                             .5
electric             dark                                1
electric             steel                               1
electric             fairy                               1
grass                normal                              1
grass                fire                               .5
grass                water                               2
grass                electric                            1
grass                grass                              .5

ATTACK_TYPE          DEFENSE_TYPE        EFFECT_MULTIPLIER
-------------------- ------------------- -----------------
grass                ice                                 1
grass                fighting                            1
grass                poison                             .5
grass                ground                              2
grass                flying                             .5
grass                psychic                             1
grass                bug                                .5
grass                rock                                2
grass                ghost                               1
grass                dragon                             .5
grass                dark                                1

ATTACK_TYPE          DEFENSE_TYPE        EFFECT_MULTIPLIER
-------------------- ------------------- -----------------
grass                steel                              .5
grass                fairy                               1
ice                  normal                              1
ice                  fire                               .5
ice                  water                              .5
ice                  electric                            1
ice                  grass                               2
ice                  ice                                .5
ice                  fighting                            1
ice                  poison                              1
ice                  ground                              2
```

```
ATTACK_TYPE          DEFENSE_TYPE        EFFECT_MULTIPLIER
-------------------- ------------------- -----------------
ice                  flying                              2
ice                  psychic                             1
ice                  bug                                 1
ice                  rock                                1
ice                  ghost                               1
ice                  dragon                              2
ice                  dark                                1
ice                  steel                              .5
ice                  fairy                               1
fighting             normal                              2
fighting             fire                                1

ATTACK_TYPE          DEFENSE_TYPE        EFFECT_MULTIPLIER
-------------------- ------------------- -----------------
fighting             water                               1
fighting             electric                            1
fighting             grass                               1
fighting             ice                                 2
fighting             fighting                            1
fighting             poison                             .5
fighting             ground                              1
fighting             flying                             .5
fighting             psychic                            .5
fighting             bug                                .5
fighting             rock                                2

ATTACK_TYPE          DEFENSE_TYPE        EFFECT_MULTIPLIER
-------------------- ------------------- -----------------
fighting             ghost                               0
fighting             dragon                              1
fighting             dark                                2
fighting             steel                               2
fighting             fairy                              .5
poison               normal                              1
poison               fire                                1
poison               water                               1
poison               electric                            1
poison               grass                               2
poison               ice                                 1
```

```
ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
poison               fighting                             1
poison               poison                              .5
poison               ground                              .5
poison               flying                               1
poison               psychic                              1
poison               bug                                  1
poison               rock                                .5
poison               ghost                               .5
poison               dragon                               1
poison               dark                                 1
poison               steel                                0

ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
poison               fairy                                2
ground               normal                               1
ground               fire                                 2
ground               water                                1
ground               electric                             2
ground               grass                               .5
ground               ice                                  1
ground               fighting                             1
ground               poison                               2
ground               ground                               1
ground               flying                               0

ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
ground               psychic                              1
ground               bug                                 .5
ground               rock                                 2
ground               ghost                                1
ground               dragon                               1
ground               dark                                 1
ground               steel                                2
ground               fairy                                1
flying               normal                               1
flying               fire                                 1
flying               water                                1

ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
flying               electric                            .5
flying               grass                                2
flying               ice                                  1
flying               fighting                             2
flying               poison                               1
flying               ground                               1
flying               flying                               1
flying               psychic                              1
flying               bug                                  2
```

```
flying                rock                            .5
flying                ghost                            1

ATTACK_TYPE           DEFENSE_TYPE        EFFECT_MULTIPLIER
--------------------  -------------------  -----------------
flying                dark                             1
flying                steel                           .5
flying                fairy                            1
psychic               normal                           1
psychic               fire                             1
psychic               water                            1
psychic               electric                         1
psychic               grass                            1
psychic               ice                              1
psychic               fighting                         2
psychic               poison                           2

ATTACK_TYPE           DEFENSE_TYPE        EFFECT_MULTIPLIER
--------------------  -------------------  -----------------
psychic               ground                           1
psychic               flying                           1
psychic               psychic                         .5
psychic               bug                              1
psychic               rock                             1
psychic               ghost                            1
psychic               dragon                           1
psychic               dark                             0
psychic               steel                           .5
psychic               fairy                            1
bug                   normal                           1

ATTACK_TYPE           DEFENSE_TYPE        EFFECT_MULTIPLIER
--------------------  -------------------  -----------------
bug                   fire                            .5
bug                   water                            1
bug                   electric                         1
bug                   grass                            2
bug                   ice                              1
bug                   fighting                        .5
bug                   poison                          .5
bug                   ground                           1
bug                   flying                          .5
bug                   psychic                          2
bug                   bug                              1
```

```
ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
bug                  rock                                 1
bug                  ghost                               .5
bug                  dragon                               1
bug                  dark                                 2
bug                  steel                               .5
bug                  fairy                               .5
rock                 normal                               1
rock                 fire                                 2
rock                 water                                1
rock                 electric                             1
rock                 grass                                1

ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
rock                 ice                                  2
rock                 fighting                            .5
rock                 poison                               1
rock                 ground                              .5
rock                 flying                               2
rock                 psychic                              1
rock                 bug                                  2
rock                 rock                                 1
rock                 ghost                                1
rock                 dragon                               1
rock                 dark                                 1

ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
rock                 steel                               .5
rock                 fairy                                1
ghost                normal                               0
ghost                fire                                 1
ghost                water                                1
ghost                electric                             1
ghost                grass                                1
ghost                ice                                  1
ghost                fighting                             1
ghost                poison                               1
ghost                ground                               1
```

```
ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
ghost                flying                               1
ghost                psychic                              2
ghost                bug                                  1
ghost                rock                                 1
ghost                ghost                                2
ghost                dragon                               1
ghost                dark                                .5
ghost                steel                                1
ghost                fairy                                1
dragon               normal                               1
dragon               fire                                 1

ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
dragon               water                                1
dragon               electric                             1
dragon               grass                                1
dragon               ice                                  1
dragon               fighting                             1
dragon               poison                               1
dragon               ground                               1
dragon               flying                               1
dragon               psychic                              1
dragon               bug                                  1
dragon               rock                                 1

ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
dragon               ghost                                1
dragon               dragon                               2
dragon               dark                                 1
dragon               steel                               .5
dragon               fairy                                0
dark                 normal                               1
dark                 fire                                 1
dark                 water                                1
dark                 electric                             1
dark                 grass                                1
dark                 ice                                  1
```

```
ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
dark                 fighting                           .5
dark                 poison                              1
dark                 ground                              1
dark                 flying                              1
dark                 psychic                             2
dark                 bug                                 1
dark                 rock                                1
dark                 ghost                               2
dark                 dragon                              1
dark                 dark                               .5
dark                 steel                               1

ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
dark                 fairy                              .5
steel                normal                              1
steel                fire                               .5
steel                water                              .5
steel                electric                           .5
steel                grass                               1
steel                ice                                 2
steel                fighting                            1
steel                poison                              1
steel                ground                              1
steel                flying                              1

ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- -----------------
steel                psychic                             1
steel                bug                                 1
steel                rock                                2
steel                ghost                               1
steel                dragon                              1
steel                dark                                1
steel                steel                              .5
steel                fairy                               2
fairy                normal                              1
fairy                fire                               .5
fairy                water                               1
```

```
ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- ----------------
fairy                electric                            1
fairy                grass                               1
fairy                ice                                 1
fairy                fighting                            2
fairy                poison                             .5
fairy                ground                              1
fairy                flying                              1
fairy                psychic                             1
fairy                bug                                 1
fairy                rock                                1
fairy                ghost                               1

ATTACK_TYPE          DEFENSE_TYPE         EFFECT_MULTIPLIER
-------------------- -------------------- ----------------
fairy                dragon                              2
fairy                dark                                2
fairy                steel                              .5
fairy                fairy                               1
```

Evolutions (**from_pokemon**: varchar(30), **to_pokemon**: varchar(30), evolution_level: int)

```
FROM_POKEMON                   TO_POKEMON                     EVOLUTION_LEVEL
------------------------------ ------------------------------ ----------------
bulbasaur                      ivysaur                                      16
ivysaur                        venusaur                                     32
charmander                     charmeleon                                   16
charmeleon                     charizard                                    36
squirtle                       wartortle                                    16
wartortle                      blastoise                                    36
caterpie                       metapod                                       7
metapod                        butterfree                                   10
weedle                         kakuna                                        7
kakuna                         beedrill                                     10
pidgey                         pidgeotto                                    18

FROM_POKEMON                   TO_POKEMON                     EVOLUTION_LEVEL
------------------------------ ------------------------------ ----------------
pidgeotto                      pidgeot                                      36
```

Pokemon_Type (**name**: varchar(30), **type**: varchar(20))

```
NAME                            TYPE
------------------------------  --------------------
beedrill                        bug
beedrill                        poison
blastoise                       water
bulbasaur                       grass
bulbasaur                       poison
butterfree                      bug
butterfree                      flying
caterpie                        bug
charizard                       fire
charizard                       flying
charmander                      fire

NAME                            TYPE
------------------------------  --------------------
charmeleon                      fire
ivysaur                         grass
ivysaur                         poison
kakuna                          bug
kakuna                          poison
metapod                         bug
pidgeot                         flying
pidgeot                         normal
pidgeotto                       flying
pidgeotto                       normal
pidgey                          flying

NAME                            TYPE
------------------------------  --------------------
pidgey                          normal
squirtle                        water
venusaur                        grass
venusaur                        poison
wartortle                       water
weedle                          bug
weedle                          poison
```

Can_learn(**move**: varchar(50), **pokemon**: varchar(30))

```
MOVE                               POKEMON
-------------------------------    ------------------------------
acrobatics                         pidgeot
acrobatics                         pidgeotto
acrobatics                         pidgey
air slash                          butterfree
air slash                          charizard
air slash                          pidgeot
air slash                          pidgeotto
air slash                          pidgey
blizzard                           blastoise
bubble                             blastoise
bubble                             squirtle

MOVE                               POKEMON
-------------------------------    ------------------------------
bubble                             wartortle
bug bite                           beedrill
bug bite                           butterfree
bug bite                           caterpie
bug bite                           kakuna
bug bite                           metapod
bug bite                           weedle
confusion                          beedrill
confusion                          butterfree
dark pulse                         blastoise
dragon claw                        charizard

MOVE                               POKEMON
-------------------------------    ------------------------------
ember                              charizard
ember                              charmander
ember                              charmeleon
energy ball                        bulbasaur
energy ball                        ivysaur
energy ball                        venusaur
fly                                pidgeot
fly                                pidgeotto
gust                               butterfree
gust                               pidgeot
outrage                            charmeleon
```

```
MOVE                                     POKEMON
----------------------------------       ----------------------------------
overheat                                 charizard
petal blizzard                           venusaur
poison sting                             beedrill
poison sting                             kakuna
poison sting                             weedle
razor leaf                               ivysaur
razor leaf                               venusaur
rock slide                               blastoise
rock slide                               charmeleon
shadow claw                              charizard
thunder punch                            charmeleon

MOVE                                     POKEMON
----------------------------------       ----------------------------------
water gun                                blastoise
water gun                                squirtle
water gun                                wartortle
water pulse                              blastoise
water pulse                              squirtle
water pulse                              wartortle
```

Learned_moves(**move**: varchar(50), **name**: varchar(30), **nickname**: varchar(50), **tr_username**: varchar(50))

```
MOVE                          NAME                    NICKNAME                     TR_USERNAME
----------------------------  ----------------------  ---------------------------  -------------------
bubble                        squirtle                Squirrel                     Suicune7
ember                         charmander              Char                         TheVeryBest
ember                         charmander              Char                         pikachu
energy ball                   bulbasaur               Bob                          Bob
energy ball                   ivysaur                 Thorn                        Suicune7
razor leaf                    ivysaur                 Thorn                        Suicune7
water gun                     squirtle                Squirrel                     Suicune7
```

All SQL Queries (And where to find them)

fetchPlayerPokemonFromDb(username) - appService.js: line 81

```
`SELECT nickname, name, pp_level FROM Player_Pokemon WHERE tr_username = :username`, [username]
```

countPlayerPokemonByType(username) - appService.js: line 90

```
`SELECT type, COUNT(*) FROM Player_Pokemon, Pokemon_Type

        WHERE Player_Pokemon.name = Pokemon_Type.name AND tr_username = :username

        GROUP BY type`, [username]
```

fetchPlayerItemsFromDb(username) - appService.js: line 101

```
`SELECT Trainer_Items.name, Items.effect, Trainer_Items.quantity FROM Trainer_Items, Items

        WHERE Trainer_Items.name = Items.name AND username = :username`, [username]
```

fetchPlayerBadgesFromDb(username) - appService.js: line 111

```
`SELECT badge, gym FROM Trainer_Badges WHERE username = :username`, [username]
```

fetchPlayerBadgesRemainingFromDb(username, gym) - appService.js: line 120

```
`SELECT name FROM Badge WHERE gym_name = :gym

        MINUS

        SELECT badge FROM Trainer_Badges WHERE username = :username AND gym = :gym`,

        [gym, username, gym]
```

fetchItemstableFromDb() - appService.js: line 133

```
'SELECT * FROM Items'
```

fetchItemsAphabetic() - appService.js: line 143

```
'SELECT * FROM Items ORDER BY name'
```

fetchItemsberryFromDb() - appService.js: line 154

```
"SELECT * FROM Items WHERE NAME LIKE '%berry%' "
```

fetchItemsmedicineFromDb() - appService.js: line 164

```
"SELECT * FROM Items WHERE NAME NOT LIKE '%berry%' "
```

fetchBerryByNameFromDb(name) - appService.js: line 174

```
`SELECT * FROM Berries WHERE name = :name`, [name]
```

fetchMedicineByNameFromDb(name) - appService.js: line 184

```
`SELECT * FROM Medicine WHERE name = :name`, [name]
```

fetchItembyNameFromDb(name) - appService.js: line 195

```
`SELECT * FROM Items WHERE NAME = :name`, [name]
```

summarizeItem() - appService.js: line 207

```
`SELECT COUNT(CASE WHEN name LIKE '%berry%' THEN 1 END) AS berry_count,

        COUNT(CASE WHEN name NOT LIKE '%berry' THEN 1 END) AS medicine

        FROM items`
```

fetchUserAndItemFromDb(username, itemname) - appService.js: line 219

```
`SELECT * FROM Trainer_Items WHERE name = :itemname AND username= :username`, { itemname: itemname, username:
username }
```

insertTrainerAndItem(name, username, quantity) - appService.js: line 230

```
`INSERT INTO Trainer_Items(name, username, quantity) VALUES (:name, :username, :quantity)`,

        [name, username, quantity]
```

updateQuantity(name, username, quantity) - appService.js: line 244

```
`UPDATE Trainer_Items SET quantity=:quantity WHERE name=:name AND username=:username`,

        [quantity, name, username]
```

insertTimezoneDb(zipcode, timezone) - appService.js: line 258

```
`INSERT INTO Timezone (zip_postal_code, timezone) VALUES (:zipcode, :timezone)`,

        [zipcode, timezone]
```

fetchUserFromDB(username, password) - appService.js: line 271

```
`SELECT * FROM Trainer WHERE username = :username AND password = :password`, { username: username, password: password }
```

fetchUserbyUsernameFromDb(username) - appService.js: line 281

```
`SELECT * FROM Trainer WHERE username = :username`, { username: username }
```

fetchTimezoneFromDb(zipcode) - appService.js: line 291

```
`SELECT * FROM Timezone WHERE zip_postal_code = :zipcode`, { zipcode: zipcode }
```

insertUserToDb(username, name, password, startdate, zipcode) - appService.js: line 302

```
`INSERT INTO Trainer (username, name, password, start_date, zip_postal_code) VALUES (:username, :name, :password, :startdate, :zipcode)`,

        [username, name, password, startdate, zipcode]
```

updateUserZipcode(username, zipcode) - appService.js: line 316

```
`UPDATE Trainer
```

```
        SET zip_postal_code=:zipcode

        WHERE username=:username`,

        [zipcode, username]
```

fetchGymsFromDb() - appService,js: line 330

```
'SELECT * FROM Gym'
```

insertPlayerBadge(gym, username, badge) - appService.js: line 340

```
`INSERT INTO Trainer_Badges (gym, username, badge) VALUES (:gym, :username, :badge)`,

        [gym, username, badge]
```

insertBattle(date, winner) - appService.js: line 356 & 360

```
 `INSERT INTO Battle (battle_date, winner) VALUES (TO_DATE(:battle_date, 'dd/mm/yyyy'), :winner)`,

        [battle_date, winner]
```

```
`SELECT id FROM Battle WHERE ROWID = :lastRow`, { lastRow: `${result.lastRowid}` }
```

insertGymChallenge(gym, username, battle) - appService.js: line 370

```
`INSERT INTO Gym_Challenges (gym, username, battle_id) VALUES (:gym, :username, :battle)`,

        [gym, username, battle]
```

fetchPokemonFromDb() - appService.js: line 384

```
'SELECT name FROM Pokemon'
```

fetchLearnedMovesFromDb(username, pokemon, nickname) - appService.js: line 394

```
'SELECT move FROM Learned_Moves WHERE name=:pokemon AND nickname=:nickname AND tr_username=:username',

        [pokemon, nickname, username]
```

fetchEvolutionsFromDb() - appService.js: line 406

```
'SELECT * FROM Evolutions'
```

fetchPokedexFiltersFromDb(pokebinds) - appService.js: line 419

```javascript
let filter_sql = "SELECT DISTINCT p.name FROM Pokemon p, Pokemon_Type pt WHERE p.name=pt.name";

    let sql_map = {

        "pokeattack":` and p.attack >= `,

        "pokedefence": ` and p.defence >= `,

        "pokespeed": ` and p.speed >= `,

        "poketype": ` and pt.type = `

    }

    for(const [key, value] of pokeBinds) {

        if(key === 'type') {

            filter_sql += `${sql_map[key]}`;

            filter_sql += `':${key}'`;

        } else {

            filter_sql += `${sql_map[key]}`;

            filter_sql += `:${key}`;
```

```
        }

    }

    const bindValues = Array.from(pokeBinds.values());

    const result = await connection.execute(filter_sql, bindValues);
```

fetchTypeMatchupFromDb(attack, defence) - appService.js: line 447

```
`SELECT effect_multiplier FROM Type_Versus WHERE attack_type=:attack and defense_type=:defence`,

        [attack, defence]
```

fetchPokemonByNameFromDb(name) - appService.js: line 461

```
`SELECT name FROM Pokemon WHERE name LIKE :name`, {name: `%${name}%`}
```

fetchPokemonLeaderboardFromDb() - appService.js: line 474

```
`SELECT username, start_date FROM Trainer t WHERE t.username IN

        (SELECT DISTINCT tr_username FROM Player_Pokemon pp1 WHERE NOT EXISTS ((SELECT name FROM Pokemon)
```

```
                                                                MINUS

                                                   (SELECT name FROM Player_Pokemon pp2

                                                    WHERE

                                                    pp2.tr_username=pp1.tr_username)))`
```

fetchGymLeaderboardFromDb() - appService.js: line 494

```
`SELECT username, COUNT(badge) FROM Trainer_Badges GROUP BY username

                                    HAVING COUNT(badge) >= 1

                                    ORDER BY COUNT(badge) DESC`
```

fetchFrequentBuyersFromDb(): appService.js: line 508

```
`SELECT username, SUM(quantity) FROM Trainer_Items GROUP BY username

                                    HAVING SUM(quantity) >= (SELECT AVG(item_quantity)

                                                FROM (SELECT SUM(quantity) AS
item_quantity

                                                FROM Trainer_items
```

```
                                            GROUP BY username
                                    )


                                )


                    ORDER BY SUM(quantity) DESC `
```

updateName(currentUser, newNameValue): appService.js: line 530

```
`UPDATE Trainer

        SET name=:newNameValue

        WHERE username=:currentuser`,

        [newNameValue, currentuser]
```

updatePassword(currentUser, newPassword) - appService.js: line 548

```
`UPDATE Trainer

        SET password=:newPasswordValue

        WHERE username=:currentuser`,

        [newPasswordValue, currentuser]
```

insertPlayerPokemon(name, nickname, tr_username, pp_level) - appService.js: line 568

```
`INSERT INTO Player_Pokemon (name, nickname, tr_username, pp_level) VALUES (:name, :nickname, :tr_username,
:pp_level)`,

            [name, nickname, tr_username, pp_level]
```

deletePlayerPokemonFromDb(username, pokemon, nickname) - appService.js: line 582

```
`DELETE FROM Player_Pokemon

            WHERE tr_username = :username AND name = :pokemon AND nickname = :nickname`,

            [username, pokemon, nickname]
```

insertPlayerPokemonMove(move, name, nickname, tr_username) - appService.js: line 599

```
`INSERT INTO Learned_Moves (move, name, nickname, tr_username) VALUES (:move, :name, :nickname, :tr_username)`,

            [move, name, nickname, tr_username]
```

fetchPokemonStatsFromDb(pokemonName) - appService.js: line 624

```
`SELECT hp, attack, defence, speed, generation, type, move
```

```
                                                  FROM Pokemon p, Pokemon_Type t, Can_Learn l

                                                  WHERE p.name=t.name and t.name=l.pokemon and
p.name=:pokemonName`, [pokemonName]
```

countPlayerPokemon(username) - appService.js: line 636

```
`SELECT Count(*) FROM Player_Pokemon WHERE tr_username =:username`, [username]
```

updatePokemonLevel(name, nickname, username, pplevel) - appService.js: line 646

```
`UPDATE Player_Pokemon

        SET pp_level=:pplevel

        WHERE name=:name AND nickname=:nickname AND tr_username=:username`,

      [pplevel, name, nickname, username]
```

fetchTableName() - appService.js: line 661

```
`SELECT TABLE_NAME FROM USER_TABLES`
```

fetchColumnNames(tableNames) - appService.js: line 670

```
`SELECT COLUMN_NAME FROM USER_TAB_COLS WHERE TABLE_NAME = :tableName`, [tableName]
```

fetchSpecifiedColumnsFromDB(tableName, columnsList) - appService.js: line 679

```
`SELECT ${columnsList} FROM ${tableName}`
```

Screenshots Demonstrating Functionality of Required Queries

<u>INSERT</u>

Before

SignUp!
Get the Game Started

Username

Enter your username

Password

Enter your password

Nickname

Enter your nickname

Zip/Postal Code

Enter your Zip/Postal Code

TimeZone

PDT

Register

Admin

TRAINER

☑ USERNAME
☑ NAME
☑ PASSWORD
☑ START_DATE
☑ ZIP_POSTAL_CODE

Search

Bob	Bob	123456Abc	2024-07-10T07:00:00.000Z	C1C 7T6
Suicune7	Jamie	cpsc304IsCool	2024-07-10T07:00:00.000Z	X1A 5P3
admin	admin	1234	2024-07-31T07:00:00.000Z	V5Y 1C8
Dana	Cool New Name	123	2024-07-31T07:00:00.000Z	V6T 1Z4

During

SignUp!
Get the Game Started

Username

NewPlayer1000

Password

unguessablepass

Nickname

Nick

Zip/Postal Code

M5V 3L9

TimeZone

EDT

Register

After

Username

NewPlayer1000

Password

unguessablepass

Nickname

Nick

Zip/Postal Code

M5V 3L9

TimeZone

EDT

Register

Admin

TRAINER

☑ USERNAME
☑ NAME
☑ PASSWORD
☑ START_DATE
☑ ZIP_POSTAL_CODE

Search

Suicune7	Jamie	cpsc304IsCool	2024-07-10T07:00:00.000Z	X1A 5P3
admin	admin	1234	2024-07-31T07:00:00.000Z	V5Y 1C8
NewPlayer1000	Nick	unguessablepass	2024-08-03T07:00:00.000Z	M5V 3L9
Dana	Cool New Name	123	2024-07-31T07:00:00.000Z	V6T 1Z4

DELETE

Before

Dana's Team

Pokemon Caught: 4

NICKNAME	NAME	LEVEL
Blast	blastoise	2
Butter	butterfree	2
Charm	charmander	3
Bubble	squirtle	1

Train Pokemon Release Pokemon

NICKNAME:

NAME:

LEVEL:

HP:

ATTACK:

DEFENCE:

SPEED:

GENERATION:

TYPE:

LEARNED
MOVES:

During

Dana's Tea

Pokemon Caught: 4

NICKNAME	NAME	LEVEL
Blast	blastoise	2
Butter	butterfree	2
Charm	charmander	3
Bubble	squirtle	1

Train Pokemon   Release Pokemon

NICKNAME:
Bubble

NAME:
squirtle

LEVEL: 1

HP: 44

ATTACK: 48

DEFENCE: 65

SPEED: 43

GENERATION:
1

TYPE: water

LEARNED

After

Dana's Team

Pokemon Caught: 3

NICKNAME	NAME	LEVEL
Blast	blastoise	2
Butter	butterfree	2
Charm	charmander	3

Train Pokemon   **Release Pokemon**

NICKNAME:

NAME:

LEVEL:

HP:

ATTACK:

DEFENCE:

SPEED:

GENERATION:

TYPE:

**LEARNED
MOVES:**

UPDATE

Before

Profile Information

USERNAME: Dana

NAME: Dana

CHANGE NAME

ZIP/POSTAL CODE: V6T 1Z4

CHANGE ZIP/POSTAL CODE

CHANGE PASSWORD   LOGOUT

During

Dana	
Pokemon	
Suicune7	2
pikachu	2
TheVeryBest	1

localhost:50003 says

Please enter your new name

Cool New Name

OK   Cancel

Profile Information

USERNAME: Dana

NAME: Dana

CHANGE NAME

ZIP/POSTAL CODE: V6T 1Z4

CHANGE ZIP/POSTAL CODE

CHANGE PASSWORD   **LOGOUT**

After

Profile Information

USERNAME: Dana

NAME: Cool New Name

CHANGE NAME

ZIP/POSTAL CODE: V6T 1Z4

CHANGE ZIP/POSTAL CODE

CHANGE PASSWORD   LOGOUT

SELECTION

Before

During

Pokemon

NAME
beedrill
blastoise
bulbasaur
butterfree
caterpie

Reset Pokemon

NAME:

HP:

ATTACK:

DEFENCE:

SPEED:

GENERATION:

TYPE:

MOVES:

SEARCH BY NAME:

Enter NAME

Search

Filter Search (Select search parameters):

Type ☑ Attack ☑ Defence ☐ Speed ☐

TYPE: FIRE

ATTACK: 80 DEFENCE: 0 SPEED: 0

Search

After (Users can choose which attributes and values to use in the selection for filtering pokemon in the pokedex)

Pokemon

NAME
charizard

NAME: charizard

HP: 78

ATTACK: 84

DEFENCE: 78

SPEED: 100

GENERATION: 1

TYPE: flying, fire

MOVES: shadow claw, overheat, ember, dragon claw, air slash

Reset Pokemon

SEARCH BY NAME:

Enter NAME

Search

Filter Search (Select search parameters):

Type ☑   Attack ☑   Defence ☐   Speed ☐

TYPE: FIRE   ⌄

ATTACK: 80 ⌄   DEFENCE: 0 ⌄   SPEED: 0 ⌄

Search

PROJECTION

Before

During

Admin

POKEMON ▼

☑ NAME
☑ HP
☑ ATTACK
☐ DEFENCE
☐ SPEED
☑ GENERATION

Search

After

Admin

POKEMON ▾

☑ NAME
☑ HP
☑ ATTACK
☐ DEFENCE
☐ SPEED
☑ GENERATION

Search

NAME	HP	ATTACK	GENERATION
bulbasaur	45	49	1
ivysaur	60	62	1
venusaur	80	82	1
charmander	39	52	1
charmeleon	58	64	1

JOIN

Before

During

After (Joins on Pokemon, Can_Learn, and Type with user-specified pokemon name to retrieve and list all stats)

AGGREGATION WITH GROUP BY

Before

Butter	butterfree	2
Charm	charmander	3
Melon	charmeleon	1

Train Pokemon   **Release Pokemon**

Count Number of Pokemon by Type

HP:

ATTACK:

DEFENCE:

SPEED:

GENERATION:

TYPE:

LEARNED
MOVES:

Bag

During

Butter	butterfree	2
Charm	charmander	3
Melon	charmeleon	1

Train Pokemon **Release Pokemon**

Count Number of Pokemon by Type

LEVEL:

HP:

ATTACK:

DEFENCE:

SPEED:

GENERATION:

TYPE:

LEARNED
MOVES:

Bag

After

Train Pokemon   Release Pokemon

Count Number of Pokemon by Type

TYPE:	POKEMON CAUGHT:
bug	1
flying	1
fire	2
water	1

AGGREGATION WITH HAVING

Note: this query is used to populate a leaderboard and is run whenever the homepage is loaded

Before

'Gotta Be The Very Best' Leaderboard

Congratulations to our top Gym-Battlers!

TRAINER	GYM BADGES
pikachu	2
Suicune7	2
TheVeryBest	1
admin	1

Lauren1234's Team

Badges

NAME	GYM

During

Challenge Gyms

All Gyms

NAME	LEADER	TYPE	CITY
Pewter Gym	Brock	rock	Pewter City
Cerulean Gym	Misty	water	Cerulean City
Hidden Cerulean Gym	Jessie	water	Cerulean City

GYM NAME:

Cerulean Gym

Fight!

RESULT:

Congratulations! You won the battle at Cerulean Gym!!! You aquire the Basic Badge badge from Cerulean Gym

Lauren1234's Team

Badges

NAME	GYM
Basic Badge	Canalave Gym
Rocket Badge	Hidden Cerulean Gym
Basic Badge	Pewter Gym

After (After a trainer has collected at least 1 gym badge, they will show up in the appropriate spot on the leaderboard)

'Gotta Be The Very Best' Leaderboard

Congratulations to our top Gym-Battlers!

TRAINER	GYM BADGES
Lauren1234	6
pikachu	2
Suicune7	2
TheVeryBest	1

NESTED AGGREGATION WITH GROUP BY

Note: this query is run whenever the store page is loaded

Before

Frequent Buyers Club

These customers buy more than the average trainer!

TRAINER	PURCHASES
DatabasePro	31

Lauren1234's Team

Bag

NAME	EFFECT	QUANTITY

During

ITEM TO BUY

sitrus berry

BUY IT NOW

localhost:50000

Item is added to your bag successfully!

OK

Lauren1234's Team

Bag

leppa berry	reaches 0 PP, restores 10 PP of the move	1
potion	Restores 20 HP	3
lemonade	Restores 70 HP	8

After (A Trainer who buys more than the average amount of items/per user is added to our frequent buyers club)

Frequent Buyers Club

These customers buy more than the average trainer!

TRAINER	PURCHASES
DatabasePro	31
Lauren1234	22

DIVISION

Note: this query is used to populate a leaderboard and is run whenever the homepage is loaded

Before

'Gotta Catch Them All' Leaderboard

Congratulations to all the trainers that have caught all the available pokemon!

TRAINER	TRAINER SINCE
DatabasePro	2024-07-20
Suicune7	2024-07-10

```
SQL> SELECT * FROM Player_pokemon WHERE tr_username='Suicune7';

NAME                 NICKNAME             TR_USERNAME                   PP_LEVEL
-------------------- -------------------- ------------------------- ----------
squirtle             Squirrel             Suicune7                          14
ivysaur              Thorn                Suicune7                           1
charmander           Helios               Suicune7                          11
bulbasaur            Pog Champ            Suicune7                          20
venusaur             Leafy                Suicune7                          23
charmeleon           Melon                Suicune7                          26
charizard            Dragon Overlord      Suicune7                          99
wartortle            Tuttie               Suicune7                          16
blastoise            blastoise            Suicune7                          30
caterpie             Leggy                Suicune7                           3
metapod              zukerburg            Suicune7                          13

NAME                 NICKNAME             TR_USERNAME                   PP_LEVEL
-------------------- -------------------- ------------------------- ----------
butterfree           Free Bird            Suicune7                          10
weedle               Sting                Suicune7                           9
kakuna               Kat                  Suicune7                           6
beedrill             Queeny               Suicune7                          18
pidgey               Wings                Suicune7                           9
pidgeotto            Wings2               Suicune7                          19
pidgeot              Wings3               Suicune7                          27

18 rows selected.
```

During

Suicune7's Team

Pokemon Caught: 18

NICKNAME	NAME	LEVEL
Squirrel	squirtle	14
Thorn	ivysaur	1
Helios	charmander	11
Pog Champ	bulbasaur	20
Leafy	venusaur	23

Train Pokemon   Release Pokemon

NICKNAME:
Squirrel

NAME:
squirtle

🌐 localhost:50000

Do you want to release your squirtle, Squirrel?

OK   Cancel

DEFENCE: 65

SPEED: 43

GENERATION:
1

TYPE: water


```
SQL> /

NAME                    NICKNAME                TR_USERNAME              PP_LEVEL
---------------------   ---------------------   ---------------------   ----------
ivysaur                 Thorn                   Suicune7                         1
charmander              Helios                  Suicune7                        11
bulbasaur               Pog Champ               Suicune7                        20
venusaur                Leafy                   Suicune7                        23
charmeleon              Melon                   Suicune7                        26
charizard               Dragon Overlord         Suicune7                        99
wartortle               Tuttie                  Suicune7                        16
blastoise               blastoise               Suicune7                        30
caterpie                Leggy                   Suicune7                         3
metapod                 zukerburg               Suicune7                        13
butterfree              Free Bird               Suicune7                        10

NAME                    NICKNAME                TR_USERNAME              PP_LEVEL
---------------------   ---------------------   ---------------------   ----------
weedle                  Sting                   Suicune7                         9
kakuna                  Kat                     Suicune7                         6
beedrill                Queeny                  Suicune7                        18
pidgey                  Wings                   Suicune7                         9
pidgeotto               Wings2                  Suicune7                        19
pidgeot                 Wings3                  Suicune7                        27

17 rows selected.
```

After (A trainer listed on the pokemon leaderboard who releases a pokemon will no longer show up on the leaderboard)

'Gotta Catch Them All' Leaderboard

Congratulations to all the trainers that have caught all the available pokemon!

TRAINER	TRAINER SINCE
DatabasePro	2024-07-20